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REMARKS

In order to place this application in condition for a complete action on the merits, the specification has been suitably revised to correct informalities and to place it in better conformance with U.S. practice. Claims 1-7 have been amended in formal respects to improve the wording and bring them into better conformance with U.S. practice. Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "VERSION WITH MARKINGS TO SHOWN CHANGES MADE."

To obtain a fuller scope of coverage, new claims 8-18 have been added. Adequate support for the subject matter recited in these claims may be found in the specification as originally filed.

Early and favorable action on the merits are respectfully requested.

Respectfully submitted,
ADAMS & WILKS
Attorneys for Applicants

By: 
Bruce L. Adams
Reg. No. 25,386

50 Broadway
31st Floor
New York, NY 10004
(212) 809-3700

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Attorney Name

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DECEMBER 19, 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Paragraph beginning at line 8 of page 1 has been amended as follows:

In general, a bearing of a mass produced motor has a bearing structure [of] for supporting a motor shaft by using ball bearings. In such a bearing, however, steel balls serving as ball bearings, being in a state of rotating on a shaft or a support in principle, tend to generate noise. In particular, in an information home appliance mounted with an HDD (hard disk drive, which are recently becoming denser, a motor for driving the HDD at a higher speed generates larger noise from the bearing to cause a noise problem. Moreover, a bearing formed using [the] ball [bearing] bearings tends to cause a large NRRO (non-resonant rotary oscillation). This causes read/write [error] errors in [a] a dense HDD [becomes denser].

Paragraph beginning at line 19 of page 1 has been amended as follows:

Therefore, in recent years, development work [is] has been increasing [about] in connection with a bearing known as a hydraulic bearing (or a dynamic pressure bearing) in

which oil is used as a lubricant. In the hydraulic bearing, a lubricating oil filling a space between a shaft and a sleeve (a supporter of the shaft) provides [a] rotation without causing the [both] sleeve and the shaft to come into contact [with] each other. This hardly produces noise in principle with a trace or circumference of the rotating shaft being almost round to cause a considerably smaller NRRO compared with that of the bearing with the ball bearings.

Paragraph beginning at line 5 of page 2 has been amended as follows:

FIGURE 1 is a cross sectional [views] view showing a principal part of a related spindle motor. The spindle motor 200 is provided with a hydraulic bearing assembled with the following being taken as prime components, a sleeve (a support) 1 formed with a shaft body inserting hole 1a, a frame 2 securing the lower side of the sleeve 1, a cylindrical shaft body 3 having a cross sectional form of an inverted T and being inserted into a space formed by the shaft body inserting hole 1a of the sleeve 1, [the sleeve 1 and the frame 2,] with a clearance being created between the shaft body 3 and inner walls of the sleeve 1 and the frame 2, a hub 4 mounted on an upper side of the shaft body 3 protruded the sleeve 1, and oil 5 filling the above clearance.

Paragraph beginning at line 25 of page 2 has been amended as follows:

The core 6 has a structure in which a plurality of core materials 6a are laminated, the prime material of which is a doughnut-[like]shaped magnetic steel sheet. For the core material 6a in the related art, 0.35mm thick magnetic steel sheets generally much in demand were used with [fore] four such sheets [of them] being laminated to constitute the core 6.

Paragraph beginning at line 6 of page 3 has been amended as follows:

In recent years, development [is being] has been carried out so that the HDD is mounted on a portable information device. This requires the developer to downsize the spindle motor as a power source for the HDD. Meanwhile, for an electric power supply, a battery is used with which a stable [electric] supply of electricity for a long service time in difficult to obtain. Hence, the smallest possible consumed power is required for electronic parts to be mounted to make it [necessary] possible for the consumed power of the spindle motor to [be] also be made [as being] the smallest possible. Therefore, in the related art, based on a generally known fact that a core with a larger volume consumes less

power, the core volume must be enlarged for reducing power consumption. In addition, in the related art, mounting of a spindle motor on a portable information device was not [so] seriously considered in view of the fact that the spindle motor was mainly to be used for a device which allows a stable power to be supplied from a stable electric supply. Thus, developers of the spindle motor were not so conscious of power consumption of the spindle motor.

Paragraph beginning at line 17 of page 5 has been amended as follows:

The magnetic steel sheet is made to have a thickness of 0.2 mm because it was found that [thinner] a smaller thickness of the magnetic steel sheet forming the core reduces [makes] consumed power, i.e., consumed current, [less] as will be explained below in detail in connection with the description of a preferred embodiment. The thickness of 0.2 mm is preferable because [the] this thickness is the lower limit [for] of currently available magnetic steel sheet in providing adequate strength for forming the riveting section.

Paragraph beginning at line 10 of page 7 has been amended as follows:

In the following description, a preferred embodiment of the present invention will be explained in detail with

reference to the attached drawings. It is, however, to be understood that the present invention is not limited by the embodiment.

IN THE CLAIMS:

Claims 1-7 have been amended as follows:

1. (Amended) A spindle motor comprising: a rotary body mounted to undergo rotation about [of rotation rotating with] an axis of rotation [thereof being centered]; a magnet mounted to the rotary body [on the body of rotation] for causing the rotary [making the] body to undergo [of] rotation in response to [rotate by an action of] a varying magnetic field; a coil for generating the varying magnetic field [acting on the magnet]; and a core comprised of [formed by laminating] a plurality of laminated doughnut-shaped [like] magnetic steel sheets each having [with] a plurality of protrusions provided on a periphery through which a [for winding] wire of the coil is wound, [the improvement wherein] a thickness of the respective [the core with a specified thickness is formed by laminating thinnest possible] magnetic steel sheets being the smallest possible thickness allowable to provide sufficient mechanical strength to enable riveting of the magnetic steel sheets.

2. (Amended) A [The] spindle motor according to claim 1; [,] wherein the [thinnest possible] magnetic steel sheets [sheet] forming the core have [has] a thickness in the range of 0.15 mm to less than 0.35 mm.

3. (Amended) A [The] spindle motor according to claim 1; [2,] wherein the [thinnest possible] magnetic steel sheets have [sheet has] a thickness of about 0.2 mm.

4. (Amended) A [The] spindle motor according to claim 1; [,] wherein the respective magnetic steel sheets are [sheet is] provided with a plurality of rivet [riveting] portions [at] each of which comprises an indentation [is] provided on one side of the respective steel sheets [sheet] to form a projection on an opposite [the other] side; the magnetic steel sheets are laminated together such that [, and at each of the riveting portions,] the projections on one of the magnetic steel sheets are [sheet is] fitted to the indentations [indentation] of an adjacent [another] magnetic steel sheet; and the magnetic steel sheets are [for being] riveted to each other at the rivet portions to thereby form the [make up a] laminated structure of the [magnetic steel sheets for the] core.

5. (Amended) A core for a spindle motor comprising:
a plurality [wherein the core is a lamination] of magnetic
steel sheets laminated to each other, each magnetic steel
sheet having a portion through which a wire of a coil can be
passed; wherein [each having] a thickness of the magnetic
steel sheets is in the range of 0.15 mm to less than 0.35 mm.

6. (Amended) A core for a spindle motor according
to claim 5; wherein the magnetic steel sheets have [sheet has]
a thickness of about 0.2 mm.

7. (Amended) A method of manufacturing a spindle
motor provided with a core formed by laminating a plurality of
magnetic steel sheets, the method comprising the steps of:

forming a plurality of rivet [riveting] portions on
each of the magnetic steel sheets by forming at each of the
rivet [riveting] portions an indentation on one side of a
respective [the] steel sheet to form a projection on the other
side thereof;

at each of the rivet [riveting] portions, fitting
the projection on one magnetic steel sheet to the indentation
of an adjacent [another] magnetic steel sheet; and

laminating the [a] plurality of the magnetic steel
sheets one by one by riveting the indentation and the
projection fitted thereto at each of the rivet [riveting]
portions for making up the core.